

A LIMITED LIABILITY PARTNERSHIP INCLUDING  
PROFESSIONAL CORPORATIONS

## PATENT, TRADEMARK AND COPYRIGHT CAUSES

620 NEWPORT CENTER DRIVE

SIXTEENTH FLOOR

NEWPORT BEACH, CALIFORNIA 92660-8016

(949) 760-0404

FAX (949) 760-9502

INTERNET: [WWW.KMOB.COM](http://WWW.KMOB.COM)

ANN A. BYUN  
ROBERT F. GAZDZINSKI  
FRED C. HERNANDEZ  
STACEY R. HALPERN†  
R. SCOTT WEIDE  
MICHAEL K. FRIEDLAND  
DALE C. HUNT  
LEE W. HENDERSON  
DEBORAH S. SHEPHERD  
RICHARD E. CAMPBELL  
MARK M. ABUMERI  
JON W. GURKA  
KATHERINE W. WHITE  
JOSEPH J. BASISTA  
ERIC M. NELSON  
ALEXANDER C. CHEN  
MARK R. BENEDICT  
PAUL N. CONOVER  
MICHAEL T. CRUZ  
JOHN P. MUSONE  
ROBERT J. ROBY  
SABING H. LEE  
JENNY G. KO  
KAROLINE A. DELANEY  
JOHN W. HOLCOMB  
JAMES J. MULLEN, III

OF COUNSEL  
JERRY B. SEILER

JAPANESE PATENT ATTY  
KATSUHIRO ARAI

EUROPEAN PATENT ATTY  
MARTIN HELLEBRANDT

KOREAN PATENT ATTY  
MINCHEOL KIM

CHINESE PATENT ATTY  
JIAWEI HUANG

SCIENTISTS & ENGINEERS  
(NON-LAWYERS)

RAIMOND J. SALENIEKS\*\*  
 RENEE E. CANUSO\*\*  
 MICHAEL L. FULLER\*\*  
 NEIL S. BARTFELD\*\*  
 MICHAEL J. GILLY  
 DANIEL E. JOHNSON\*\*  
 JEFFERY KOEPKE  
 KHURRAM RAHMAN

LOUIS J. KNOBE  
DON W. MARTENS  
GORDON H. OLSON  
JAMES E. OLSON  
ALVIN L. OLSON  
LESLIE A. OLSON  
LARRY R. OLSON  
LORNE C. OLSON  
LLOYD E. OLSON  
LUCAS E. OLSON  
LYNN E. OLSON  
MARTIN E. OLSON  
MICHAEL E. OLSON  
NORMAN E. OLSON  
OLIVER E. OLSON  
OSCAR E. OLSON  
PAUL E. OLSON  
RALPH E. OLSON  
ROBERT E. OLSON  
RONALD E. OLSON  
SCOTT E. OLSON  
STEVEN E. OLSON  
TERRY E. OLSON  
THOMAS E. OLSON  
TIMOTHY E. OLSON  
VICTOR E. OLSON  
WALTER E. OLSON  
WAYNE E. OLSON  
XAVIER E. OLSON  
YVES E. OLSON  
ZACHARY E. OLSON

KAREN VOGEL WEIL  
ANDREW H. SIMPSON  
JEFFREY L. VAN HOOSEAR  
DANIEL E. ALTMAN  
ERNEST A. BEUTLER  
MARGUERITE L. GUNN  
STEPHEN C. JENSEN  
VITO A. CANUSO

WILLIAM H. SHREVE  
LYNDIA J. ZADRA-SYME<sup>11</sup>  
STEVEN J. NATAUPSKY  
PAUL A. STEWART  
JOSEPH F. JENNINGS  
CRAIG S. SUMMERS  
ANNEMARIE KAISER  
BRENTON R. BABCOCK<sup>1</sup>  
THOMAS F. SMEGAL, JR.  
MICHAEL H. TRENHOLM  
DIANE M. REED  
JONATHAN A. BARNEY  
RONALD J. SCHOENBAUM  
JOHN R. KING  
FREDERICK S. BERRETTA  
NANCY WAYS VENSKO  
RICHARD C. GILMORE  
JOHN P. GIEZENTANNER  
ADEEL S. AKHTAR  
THOMAS R. ARNO  
DAVID N. WEISS  
DANIEL HART  
JAMES T. HAGLER  
DOUGLAS G. MUEHLHAUSER  
LORI L. YAMATO  
STEPHEN M. LOBBIN

STEPHEN M. LOBBIN  
Assistant Commissioner for Patents

Washington, D.C. 20231

**CERTIFICATE OF MAILING BY "EXPRESS MAIL"**

<b>Attorney Docket No.</b>	:	MASIMO.007C3
<b>Applicant(s)</b>	:	Diab, Kiani-Azarbayjany and Weber
<b>For</b>	:	SIGNAL PROCESSING APPARATUS
<b>Attorney</b>	:	Steven C. Jensen
<b>"Express Mail"</b>		
<b>Mailing Label No.</b>	:	EM410970204US
<b>Date of Deposit</b>	:	July 7, 1998

I hereby certify that the accompanying

Transmittal in Duplicate; Specification in 122 pages and Appendix A in 10 pages; 10 sheets of drawings; **SIGNED** Declaration and Power of Attorney in 3 pages **COPY**; Preliminary Amendment in 2 pages; Request for Interference (5 pages) with attachment - Count in 1 page; Check for Filing Fee(s); Return Prepaid Postcard

are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and are addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

Donald King

007C3.EXP:is/vml  
070698

275 BATTERY STREET  
SUITE 1840  
SAN FRANCISCO, CALIFORNIA 94111  
(415) 954-4114  
FAX (415) 954-4111

501 WEST BROADWAY  
SUITE 1400  
SAN DIEGO, CALIFORNIA 92101  
(619) 235-8550  
FAX (619) 235-0176

3801 UNIVERSITY AVENUE  
SUITE 710  
RIVERSIDE, CALIFORNIA 92501  
(909) 781-9231  
FAX (909) 781-4507

\* A PROFESSIONAL CORPORATION  
† ALSO MEMBER OF D.C. BAR  
†† ALSO BARRISTER AT LAW (U.K.)  
\*\* U.S. PATENT AGENT

**ASSISTANT COMMISSIONER FOR PATENTS  
WASHINGTON, D.C. 20231**

ATTENTION: APPLICATION BRANCH

Sir:

Transmitted herewith for filing is the patent application of

Inventor(s): **Mohamed K. Diab, Esmail Kiani-Azarbayjany and Walter M. Weber**

For: **SIGNAL PROCESSING APPARATUS**

Enclosed are:

- (X) 20 sheets of drawings.
- (X) This application is a continuation of prior application no. 08/943,511, filed October 6, 1997, which is a continuation of application no. 08/572,488, filed December 14, 1995 (now U.S. Patent No. 5,685,299), which is a continuation of application no. 08/132,812, filed October 6, 1993 (now U.S. Patent No. 5,490,505).
- (X) A copy of Declaration from prior application is enclosed.
- (X) Preliminary Amendment is enclosed.
- (X) Incorporation by Reference. The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
- (X) Return prepaid postcard.


**CLAIMS AS FILED**

FOR	NUMBER FILED	NUMBER EXTRA	RATE	FEE
Basic Fee			\$790	\$790
Total Claims	1 - 20 =	0 ×	\$22	\$0
Independent Claims	1 - 3 =	0 ×	\$82	\$0
If application contains any multiple dependent claims(s), then add			\$270	\$0
<b>TOTAL FILING FEE</b>				<b>\$790</b>

- (X) Request for Interference in five (5) pages with attachment - Count in one (1) pages.
- (X) A check in the amount of \$790 to cover the filing fee is enclosed.
- (X) The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Account No. 11-1410. A duplicate copy of this sheet is enclosed.

86/070-4097T60

(X) Please use Customer No. 20,995 for the correspondence address.



Stephen C. Jensen  
Registration No. 35,556  
Attorney of Record

SCJ-7461:is/vml  
070798

0911604-070798

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Mohamed K. Diab, et al.	)	Group Art Unit 3305
			)	
Appl. No.	:	Unknown	)	
			)	
Filed	:	Herewith	)	
			)	
For	:	SIGNAL PROCESSING	)	
		APPARATUS	)	
			)	
Examiner	:	Unknown	)	
			)	

---

REQUEST FOR INTERFERENCE  
37 C.F.R. § 1.607

Assistant Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

Applicant seeks to have an interference declared between this application and an unexpired patent. Pursuant to 37 C.F.R. § 1.607, Applicant submits the following information.

1. Identification of the Patent -- 37 C.F.R. § 1.607(a)(1)

The patent is U.S. Patent No. 5,645,060 ("the '060 patent") filed on June 14, 1995 and issued on July 8, 1997 to Thomas J. Yorkey, entitled METHOD AND APPARATUS FOR REMOVING ARTIFACT AND NOISE FROM PULSE OXIMETRY, and assigned to Nellcor Puritan Bennett Inc., Pleasanton, California.

2. Presentation of the Proposed Count -- 37 C.F.R. § 1.607(a)(2)

A method for measuring saturation of a blood constituent in a patient comprising the steps of:

862020-409TT60

Appl. No. : Unknown  
Filed : Herewith

irradiating said patient with electromagnetic radiation of at least three discrete, different wavelengths;

sensing an intensity of said radiation for each of said wavelength after it passes through a portion of said patient to produce first, second, and third intensity signals;

representing each of said intensity signals as a function of concentration, the wavelength corresponding to the intensity signal, and a time-variable motion term corresponding to motion noise, said motion terms being proportional to one another for each of said intensity signals; and

solving the functions to obtain a value for said saturation, wherein each of said functions includes a plurality of coefficients related to the wavelengths, the coefficients of said third function being determined based upon the coefficients of the first and second functions, and further comprising the steps of approximating at least a portion of said first and second intensity signals based upon the third intensity signal, and determining saturation from said approximation of said first and second intensity signals.

An extra copy of the proposed count is submitted herewith for the Examiner's use in filling out PTO forms.

3. Identification of at Least One Claim in the Patent -- 37 C.F.R. § 1.607(a)(3)

Claims 6-10 and 15 of the '060 patent correspond to Count 1.

Appl. No. : Unknown  
 Filed : Herewith

4. Presentation of at Least One Claim Corresponding to the Proposed Count and An Explanation of How the Identified Claim Corresponds to the Proposed Count -- 37 C.F.R. § 1.607(a)(4)

Claim 39 of the Application corresponds to Count 1.

While Claims 6-10 and 15 of the '060 patent do not correspond exactly to the proposed count, Applicants do not currently argue that any of those claims is drawn to a separate patentable invention within the meaning of 37 C.F.R. § 1.601(n).

5. Application of the Presented Claims to the Disclosure -- 37 C.F.R. § 1.607(a)(5)

The terms of the application claims identified as corresponding to the proposed count and not previously in the application can be applied to the disclosure of the application as follows:

TERMS OF THE CLAIMS	APPLICATION TO THE DISCLOSURE
39. A method for measuring saturation of a blood constituent in a patient comprising the steps of:	Page 78, lines 19-20
irradiating said patient with electromagnetic radiation of at least three discrete, different wavelengths;	FIG. 11 Page 79, lines 5-12; Page 81, lines 3-5; Page 83, lines 15-22; Page 85, lines 1-4
sensing an intensity of said radiation for each of said wavelengths after it passes through a portion of said patient to produce first, second and third intensity signals; and	Page 81, lines 3-7; Page 82, line 19 - page 84 line 1
representing each of said intensity signals as a function of concentration, the wavelength corresponding to the intensity signal, and a time-variable motion term corresponding to motion noise, said motion terms being proportional to one another; and	equations 93, 94, 95; Page 84, lines 9-34; Page 9, lines 1-26; Page 33, lines 8-23; equations 1, 2; equations 93, 94, 95; equation 25b
solving the three functions to obtain a value for said saturation;	Page 96, lines 10-31; equations 93, 94, 95

Appl. No. : Unknown  
Filed : Herewith

wherein each of said functions includes a plurality of coefficients related to the wavelengths, the coefficients of said third function being determined based upon the coefficients of the first and second functions, and further comprising the steps of approximating at least a portion of said first and second intensity signals based upon the third intensity signal, and determining saturation from said approximation of said first and second intensity signals.

Page 36, lines 11-26;  
Page 75, line 20 - page 76, line 20;  
Page 77, lines 23 - 30;  
Equation 92;  
Page 84 line 8 - page 86, line 24;  
equations 93 - 96;  
Page 90, line 9 - page 93, line 22;  
Page 96, lines 20-31

6. Timing of the Request -- 37 C.F.R. § 1.607(a)(6)

37 C.F.R. § 1.607(a)(6) is irrelevant because this Request and the accompanying 37 C.F.R. § 1.607(a)(4) Amendment are being submitted prior to one year from the date on which the '060 patent was granted.

7. Examination Conducted With Special Dispatch -- 37 C.F.R. § 1.607(b)

Under 37 C.F.R. § 1.607(b), Applicants respectfully request that the examination of the present application be conducted with special dispatch.

8. Identification of Presented Claims Corresponding Substantially to Patent Claims - 37 C.F.R. § 1.607(c)

Applicant's Claim 39 corresponds substantially to Claim 6 of the '060 patent.

9. Request for Benefit of Filing Date of Applicant's Priority Applications

Applicant's claim priority under 35 U.S.C. § 120 to earlier filed application is as follows:

The present application is a continuation of U.S. Patent Application No. 08/943,511 filed October 6, 1997 which was a continuation of U.S. Patent Application Serial No. 08/572,488 (now U.S. Patent NO. 5,685,299) filed December 14, 1995, which is a continuation of Application Serial No. 08/132,812 (now U.S. Patent No. 5,490,505) filed October 6, 1993. Applicants are entitled to the benefit of the filing dates of these earlier filed applications for

**Appl. No.** : Unknown  
**Filed** : Herewith

interference purposes because the Count reads on at least one adequately disclosed embodiment in each of the earlier applications. Indeed, the written description of the present application is identical to that of Application Serial No. 08/132,812 filed on October 6, 1993. The application of the terms of the presented claim to the disclosure is therefore equally applicable to the disclosure of Application Serial No. 08/132,812.

Applicants thus respectfully request the benefit of the priority date of October 6, 1993, the effective filing date of the present application.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: July 7, 1998

By: Stephen C. Jensen

Stephen C. Jensen  
Registration No. 35,556  
Attorney of Record  
620 Newport Center Drive  
Sixteenth Floor  
Newport Beach, CA 92660  
(949) 760-0404

SCJ-7458:cp/rc1/is  
070698



## COUNT

A method for measuring saturation of a blood constituent in a patient comprising the steps of:

irradiating said patient with electromagnetic radiation of at least three discrete, different wavelengths;

sensing an intensity of said radiation for each of said wavelength after it passes through a portion of said patient to produce first, second, and third intensity signals;

representing each of said intensity signals as a function of concentration, the wavelength corresponding to the intensity signal, and a time-variable motion term corresponding to motion noise, said motion terms being proportional to one another for each of said intensity signals; and

solving the functions to obtain a value for said saturation, wherein each of said functions includes a plurality of coefficients related to the wavelengths, the coefficients of said third function being determined based upon the coefficients of the first and second functions, and further comprising the steps of approximating at least a portion of said first and second intensity signals based upon the third intensity signal, and determining saturation from said approximation of said first and second intensity signals.

051104-070298